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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Simon G. Thompson

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EXAMINER

KRISHNAN, VIVEK V

ART UNIT

PAPER NUMBER

2145

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/573,267	Applicant(s) THOMPSON ET AL.	
	Examiner VIVEK KRISHNAN	Art Unit 2145	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 March 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>August 8, 2006</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This is a Non-Final Office Action Correspondence in response to U.S. Application No. 10/573267 filed on March 23, 2006, claiming a U.S. National Stage entry under 35 U.S.C. 371 of International Application PCT/GB2004/004177, filed on September 30, 2004, which claims priority to GB Patent Application No. 0322871.5, filed on September 30, 2003. Claims 1-9 are pending.

Examiner acknowledges receipt of preliminary amendment and remarks/arguments filed on March 23, 2006.

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Specification

2. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: A Method of Searching for Services Offered over a Network.

3. The disclosure is objected to because of the following informalities:

Art Unit: 2145

The disclosure is objected to because it contains an embedded hyperlink and/or other form of browser-executable code. Applicant is required to delete the embedded hyperlink and/or other form of browser-executable code. See MPEP § 608.01.

Appropriate correction is required.

4. Claim 9 is objected to because of the following informalities:

The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required:

As to Claim 9, there is insufficient antecedent basis for the recited limitation "a computer readable carrier medium" in the specification. The specification should be amended to clearly define the computer readable carrier medium.

Appropriate correction is required.

Claim Rejections - 35 USC § 101

5. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

6. Claims 8 and 9 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Art Unit: 2145

7. Claim 8 recites "a computer program". Any claim whose limitations are either explicitly claimed as being implemented in software, or could be reasonably interpreted as being implemented in software, must be claimed in combination with an appropriate medium to establish a statutory category of invention and enable any functionality to be realized in order for the claimed subject matter to be statutory under the provisions of 35 U.S.C. § 101.

8. Claim 9 recites "a computer readable carrier medium carrying the computer program". Any claim whose limitations are either explicitly claimed as being implemented in software, or could be reasonably interpreted as being implemented in software, must be claimed in combination with an appropriate medium to establish a statutory category of invention and enable any functionality to be realized in order for the claimed subject matter to be statutory under the provisions of 35 U.S.C. § 101.

The Applicants' specification does not define a computer readable carrier medium. This renders the claim non-statutory, since it leaves open the possibility that the claimed computer program is embodied in a signal, which is non-statutory subject matter.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Art Unit: 2145

10. Claim 5 is rejected under 35 U.S.C. 102(b) as being anticipated by Unraveling the Web Services Web to Curbera et al. (hereinafter "Curbera") (IDS submitted August 8, 2006).

11. As to Claim 5, Curbera discloses **a method of operating a computer network-comprising:**

providing one or more groups of computer programs and associated data so as to provide one or more services to other users of the computer network (Curbera; Sections: Introduction and Description WSDL, discloses providing computer programs and data to provide services to a network),

storing in association with each such service a description of the respective service expressed in a respective ontology (Curbera; Sections: Introduction and Description WSDL, discloses storing a service description associated with each service expressed in an ontology),

storing in association with each such service an indication of the respective ontology in which its corresponding service description is expressed (Curbera; Sections: Introduction and Description WSDL, discloses storing an indication of the ontology in which a service description is expressed as a part of the service description), **and**

making both the service description and the indication of the ontology in which it is expressed available for viewing by potential users of each such respective service (Curbera; Sections: Introduction, Description WSDL, and Discovery UDDI, discloses making the service description and indication available to potential users).

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claims 1-3, and 6-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over A Bottom-Up Approach to Automating Web Service Discovery, Customization, and Semantic Translation to Mandell et al. (hereinafter "Mandell"), and further in view of Coordinating Heterogeneous Information Services based on Approximate Ontology Translation to Akahani et al. (hereinafter "Akahani").

14. As to Claims 1, 6, 8, and 9, Mandell discloses **a method, a device, and a computer readable carrier medium carrying a computer program or programs (referenced hereinafter as the method) of performing a requested service on behalf of a requesting user, the method comprising:**

receiving at a user device accessible to the user a signal representative of a description of the requested service expressed in a first service description ontology together with either input data expressed in a first operational ontology or an indication that input data will subsequently be provided in the first operational ontology from a specified source if a suitable service is located (Mandell; Sections: Abstract, Introduction, Automated Web Service Execution, and Automated Service Discovery, Customization, and

Art Unit: 2145

Semantic Translation, discloses receiving a service request expressed in a service description ontology along with semantic input parameters);

performing a search for a suitable service through a plurality of services accessible to the user device, each accessible service having an associated service description expressed in a corresponding service description ontology and having an associated operational ontology, the searching being carried out by comparing the service description of each accessible service with the service description of the requested service, [...] and, in respect of at least the or each, if any, of the accessible service having a service description matching the requested service, determining if its operational ontology is compatible with the first operational ontology and if so, determining that the or each such accessible service having a matching service description and a compatible operational ontology is a suitable service (Mandell; Sections: Abstract, Introduction, Automated Web Service Execution, and Automated Service Discovery, Customization, and Semantic Translation, discloses performing a search for a suitable service by comparing the search request service description with service descriptions on each accessible service, and if found, determining whether the input parameters are compatible in order to determine that the suitable service has been found);

invoking the suitable service or one of the suitable services, if at least one has been found, including translating if necessary the input data from the first operational ontology into the operational ontology of the suitable service and sending the, possibly translated, input data to the suitable service or informing it of from where to obtain the input data (Mandell; Sections: Abstract, Introduction, Automated Web Service Execution, and Automated Service Discovery, Customization, and Semantic Translation, discloses invoking the suitable

service using the input parameters and providing a semantic translation of the input parameters if necessary); **and**

translating, if necessary, the output data from the suitable service and presenting the, possibly translated, output data to the user (Mandell; Sections: Abstract, Introduction, Automated Web Service Execution, and Automated Service Discovery, Customization, and Semantic Translation, discloses providing the output to the user and providing a semantic translation of the output if necessary).

Mandell does not explicitly disclose, however Akahani discloses **the comparison step including using, or forming and using, service description ontology mappings where necessary** (Akahani; Sections: Abstract, Introduction, and Approximate Ontology Translation, discloses using, or forming and using, service description ontology mappings where necessary to compare service request service descriptions and service descriptions of accessible services).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify comparing service descriptions, as disclosed by Mandell, to include forming and using service description ontology mappings to compare service descriptions, as disclosed by Akahani, in order to facilitate heterogeneous service description comparison and achieve semantic interoperability (Akahani; Sections: Abstract and Introduction).

15. As to Claims 2 and 7, Mandell discloses **a method and an apparatus (referenced hereinafter as the method) of invoking, from a device connected to a computer network, an**

Art Unit: 2145

electronic service, from amongst a plurality of such services, available from the network, the method comprising:

receiving an electronic signal representative of a request for an electronic service, the service request being expressed in a first ontology (Mandell; Sections: Abstract, Introduction, Automated Web Service Execution, and Automated Service Discovery, Customization, and Semantic Translation, discloses receiving a service request expressed in a service description ontology);

selecting one of the electronic services available on the network based on the result of the comparison (Mandell; Sections: Abstract, Introduction, Automated Web Service Execution, and Automated Service Discovery, Customization, and Semantic Translation, discloses selecting an available service based on a comparison); **and**

transmitting an electronic signal to invoke the selected service (Mandell; Sections: Abstract, Introduction, Automated Web Service Execution, and Automated Service Discovery, Customization, and Semantic Translation, discloses invoking the selected service).

Mandell does not explicitly disclose, however Akahani discloses **forming a group of mappings each of which specifies a method for mapping from the first ontology to another ontology** (Akahani; Sections: Abstract, Introduction, and Approximate Ontology Translation, discloses forming a group of mappings which specify a method of mapping from a first ontology to another ontology);

using the formed group of mappings to compare the received service request with descriptions of services available on the network expressed in the first ontology or any of the ontologies to which a mapping is available from the first ontology in the formed group

of mappings (Akahani; Sections: Abstract, Introduction, and Approximate Ontology

Translation, discloses using the mappings to compare a service request with service descriptions of available services);

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify comparing service descriptions, as disclosed by Mandell, to include forming and using service description ontology mappings to compare service descriptions, as disclosed by Akahani, in order to facilitate heterogeneous service description comparison and achieve semantic interoperability (Akahani; Sections: Abstract and Introduction).

16. As to Claim 3, Mandell and Akahani in combination disclose each and every limitation of Claim 2. Mandell further discloses **comparing the ontology in which the input data is intended to be supplied to an electronic service once located, and in which the resulting output data is to be output by the service, with the operational ontology of the selected service, and if these are different, determining if a mapping is available on the network for mapping between these ontologies and if not, then trying to find a new service to select** (Mandell; Sections: Abstract, Introduction, Automated Web Service Execution, and Automated Service Discovery, Customization, and Semantic Translation, discloses comparing the input/output ontology with the operational ontology of the selected service, and if they are different, determining if a semantic translation can be made between the ontologies, and if not, finding a new service to select).

Art Unit: 2145

17. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mandell and Akahani as applied to Claim 1 above, and further in view of OntoMorph: A Translation System for Symbolic Knowledge to Chalupsky (hereinafter "Chalupsky") and U.S. Patent Application Publication No. 2004/0093344 A1 to Berger et al. (hereinafter "Berger").

18. As to Claim 4, Mandell and Akahani in combination disclose each and every limitation of Claim 2. Mandell and Akahani do not explicitly disclose, however Chalupsky discloses **compiling a mapping database of mappings from one ontology to another and building the mapping database according to the following method:**

populating the mapping database with a plurality of direct mappings from one ontology to another (Chalupsky; Sections: Abstract, Introduction, and OntoMorph, discloses storing and using transformation functions, or rewrite rules, for direct mappings from one ontology to another);

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify mapping between different ontologies, as disclosed by Mandell, as modified by Akahani, to include populating a mapping database with direct mappings from one ontology to another, as disclosed by Chalupsky, in order to provide a system that directly maps from one ontology to another both syntactically and semantically (Chalupsky; Sections: Abstract and Introduction).

Mandell, Akahani, and Chalupsky do not explicitly disclose, however Berger discloses **upon receiving a service request expressed in a first ontology, generating a first set of**

mappings which map from said first ontology to a specified target ontology by selecting appropriate mappings from the mapping database (Berger; paragraphs 48, 57-63, 70-72, and 119-123, discloses generating a first set of mappings between a first ontology and a common ontology);

forming a second set of mappings which map from any of the target ontologies of the mappings in the first set to a specified secondary target ontology which is different from the first ontology and all of the target ontologies of the mappings in the first set, by selecting any such mappings from the mappings database (Berger; paragraphs 48, 57-63, 70-72, and 119-123, discloses generating a second set of mappings between the common ontology and a second ontology); **and**

storing in the mappings database an indication of a new mapping from said first ontology to the secondary target ontology corresponding to one of the mappings in the second set, together with a reference to each of the corresponding mappings in the first and second sets required to make the mapping from the first ontology to the secondary target ontology (Berger; paragraphs 48, 57-63, 70-72, and 119-123, discloses storing the mappings in order to derive a source to target transformation of different ontologies).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify a mapping database, as disclosed by Mandell, as modified by Akahani and Chalupsky, to include forming and storing first and second sets of mappings for transformation between a first ontology and a second ontology, as disclosed by Berger, in order to facilitate transformation between different ontologies (Berger; paragraph 46).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to VIVEK KRISHNAN whose telephone number is (571) 270-5009. The examiner can normally be reached on Monday through Friday from 9:00 AM to 5:30 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Cardone can be reached on (571) 272-3933. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

VK

/Jason D Cardone/
Supervisory Patent Examiner, Art Unit 2145